09/02/2011

Third West air monitor results
Shepherd, Michael
to:
Craig Barnitz (cbamitz@utah.gov), Joyce Ackerman
09/02/2011 09:19 AM
Cc:
"Clegg, Benjamin M."
Hide Details
From: "Shepherd, Michael" <Michael.Shepherd@PacifiCorp.com>

To: "Craig Bamitz (cbarnitz@utah.gov)" <cbamitz@utah.gov>, Joyce Ackerman/R8/USEPA/US@EPA

Cc: "Clegg, Benjamin M." <Benjamin.Clegg@PacifiCorp.com>

History: This message has been replied to.

1 Attachment

219459-1.pdf

Craig and Joyce,

Attached are the air monitoring results for the past week. All results came back negative.

Thanks,

Mike Shepherd
Project Manager
Rocky Mountain Power - Major Projects
801.220.4584 Office
801.631.1310 Cell
801.220.2797 Fax
michael.shepherd@pacificorp.com

REI LAB Reservnirs Environmental, Inc.

August 31, 2011

Laboratory Code:	RES
Subcontract Number:	NA
Laboratory Report:	RES 219459-1
Project # / P.O. #	None Given
Project Description:	3rd West Substation

David Roskelley
R & R Environmental
47 West 9000 South #2
Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 219459-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr
President

RESERVOIRS ENVIRONMENTAL, INC.

AIHA Certificate of Accreditation #480, Lab ID 101533

TABLE : PCM NIOSH 7400 FIBER COUNT ANALYSIS

RES Job Number:	RES 219459-1
Client:	R & R Environmental
Client Project Number / P.O.:	None Given
Client Project Description:	3rd West Substation
Date Samples Received:	August 25, 2011
Analysis Type:	PCM 7400 A, Issue 2
Turnaround:	3-5 Day
Date Samples Analyzed:	August 30, 2011

Client ID Number	Lab ID Number	Air Volume Sampled (L)	Fields Analyzed	Fiber Count	Reporting Limit (F/mm^2)	Fiber Density (F/mm^2)	Reporting Limit (F/cc)	Fiber Concentration (F/cc)
3W-081911-N	EM 786508	1156	100	1	7.01	BRL	0.002	BRL
3W-081911-E	EM 786509	1152	100	2.5	7.01	BRL	0.002	BRL
3W-081911-S	EM 786510	758	100	0	7.01	BRL	0.004	BRL
3W-081911-W	EM 786511	496	100	1	7.01	BRL	0.005	BRL

* Unless otherwise stated sample analyses have been blank corrected.

Laboratory Quarterly Coefficient Variation (CV) by Fiber Count Range - April 1, 2011 - June 30, 2011

5-20 CV = 0.26 >20-50 CV = 0.20 >50-100 = 0.14

Digitally signed by Gina Vetralno
Date 2011.09.01 13:42:46 -06'00'

Data QA

CBR = Cannot Be Read
BRL = Below Reporting Limit

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

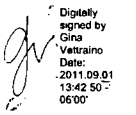
TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:	RES 219459-1
Client:	R & R Environmental
Client Project Number / P.O.:	None Given
Client Project Description:	3rd West Substation
Date Samples Received:	August 25, 2011
Analysis Type:	TEM, AHERA
Turnaround:	3-5 Day
Date Samples Analyzed:	August 31, 2011

Client ID Number	Lab ID Number	Area Analyzed (mm^2)	Air Volume Sampled (L)	Number of Asbestos Structures Detected	Analytical Sensitivity (s/cc)	Asbestos Concentration (s/cc)	Filter Loading (s/mm^2)
3W-082211-N	EM 786512	0.0990	872	ND	0.0045	BAS	BAS
3W-082211-E	EM 786513	0.1100	874	ND	0.0040	BAS	BAS
3W-082211-S	EM 786514	0.0990	876	ND	0.0044	BAS	BAS
3W-082211-W	EM 786515	0.0990	874	ND	0.0044	BAS	BAS
3W-082311-E	EM 786516	0.0880	888	ND	0.0049	BAS	BAS
3W-082311-S	EM 786517	0.0880	884	ND	0.0049	BAS	BAS
3W-082311-W	EM 786518	0.0880	884	ND	0.0049	BAS	BAS
3W-082311-N	EM 786519	0.0880	880	ND	0.0050	BAS	BAS
3W-082411-S	EM 786520	0.0880	916	ND	0.0048	BAS	BAS
3W-082411-E	EM 786521	0.0880	916	ND	0.0048	BAS	BAS
3W-082411-N	EM 786522	0.0880	892	ND	0.0049	BAS	BAS
3W-082411-W	EM 786523	0.0880	908	ND	0.0048	BAS	BAS

NA = Not Analyzed
ND = None Detected
BAS = Below Analytical Sensitivity
Average Grid Opening in mm^2 = 0.011

Filter Material = Mixed Cellulose Ester
Filter Diameter = 25 mm
Effective Filter Area = 385 sq mm



DATA QA

Due Date: 8-30-11
Due Time: EOD

RES 219459

REI LAB Reservoirs Environmental, Inc.
5801 Logan St. Denver, CO 80216 • Ph: 303 964-1986 • Fax 303-477-4275 • Toll Free :866 RESI-ENV
Pager : 303 409-2095

INVOICE TO: (IF DIFFERENT) | CONTACT INFORMATION:

Company: R&R Environmental	Company:	Contact: Dave Roskelley	Contact: Justin Kargis
Address: 47 W. 9000 S Sandy Ut. 84070	Address:	Phone: 801 541-1035	Phone: 801 828-5219
		Fax:	Fax:
		Cell/pager:	Cell/pager:
Project Number and/or P.O. #:		Final Data Deliverable Email Address: dave@rrenviro.com, justin@rrenviro.com	
Project Description/Location: 3RD West Substation			

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm
PLM / PCM / TEM ___ RUSH (Same Day) ___ PRIORITY (Next Day) X STANDARD
(Rush PCM = 2hr, TEM = 6hr.)

CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm
Metal(s) / Dust ___ RUSH ___ 24 hr. ___ 3-5 Day
RCRA 8 / Metals & Welding Fume Scan / TCLP ___ RUSH ___ 5 day ___ 10 day
Organics ___ 24 hr. ___ 3 day ___ 5 Day
Prior notification is required for RUSH turnarounds.

MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm
E.coli O157:H7, Coliforms, S.aureus ___ 24 hr. ___ 2 Day ___ 3-5 Day
Salmonella, Listeria, E.coli, APC, Y A M ___ 48 Hr. ___ 3-5 Day
Mold ___ RUSH ___ 24 Hr ___ 48 Hr ___ 3 Day ___ 5 Day

Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.

Special Instructions:

REQUESTED ANALYSIS: PLM - Short report, Long report, Point Count; TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps; PCM - 7400A, 7400B, OSHA; DUST - Total, Respirable; METALS - Analyte(s); RCRA 8, TCLP, Welding Fume, Metals Scan; ORGANICS - METH; MICROBIOLOGY: Salmonella +/-; E.coli O157:H7 +/-; Listeria +/-; Aerobic Plate Count +/- or Quantification; E.coli +/- or Quantification; Coliforms +/- or Quantification; S.aureus +/- or Quantification; Y & M +/- or Quantification; Mold +/-, Identification, Quantification; SAMPLER'S INITIALS OR OTHER NOTES

VALID MATRIX CODES: Air = A; Bulk = B; Dust = D; Paint = P; Soil = S; Wipe = W; Swab = SW; F = Food; Drinking Water = DW; Waste Water = WW; O = Other
ASTM E1792 approved wipe media only

LAB NOTES:

#	Client sample ID number (Sample ID's must be unique)	TEM	PCM	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
1	3W-081911-N		X	1,156			8/19/11		786508
2	3W-081911-E		X	1,152			↓		9
3	3W-081911-S		X	758			↓		10
4	3W-081911-W		X	496			↓		11
5	3W-082211-N	X		872			8/22/11		12
6	3W-082211-E	X		874			↓		13
7	3W-082211-S	X		876			↓		14
8	3W-082211-W	X		874			↓		15
9	3W-082311-E	X		888			8/23/11		16
10	3W-082311-S	X		884			8/23/11		17

Number of samples received: 16 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: [signature] Fed-Ex Date/Time: 8/24/11
Laboratory Use Only Received By: [signature] Date/Time: 8/25/11 @ 845a Carrier: FedEx

Sample Condition: On Ice Yes / No; Sealed Yes / No; Intact Yes / No
Temp. (F°) ______

Results:	Contact	Phone Email Fax	Date	Time	Initials	Contact	Phone Email Fax	Date	Time	Initials
	Contact	Phone Email Fax	Date	Time	Initials	Contact	Phone Email Fax	Date	Time	Initials

Tracking # 7974 4398 7340

Due Date: 8-30-11
Due Time: 8:45a

Reservoirs Environmental, Inc.

9601 Logan St Denver, CO 80216 • Ph: 303 964-1986 • Fax 303-477-4275 • Toll Free: 888 RESI-ENV
Pager : 303-509-2098

Job # 219459
Page 1 of 2

INVOICE TO: (IF DIFFERENT) | **CONTACT INFORMATION:**

Company: R & R	Company:	Contact:	Contact:
Address:	Address:	Phone:	Phone:
		Fax:	Fax
		Cell/pager:	Cell/pager:
Project Number and/or P.O. #:		Final Data Deliverable Email address:	
Project Description/Location: 3rd West Substation continued			

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm
PLM / PCM / TEM ____ RUSH (Same Day) ___ PRIORITY (Next Day) ___STANDARD (Rush PCM = 2hr, TEM = 6hr.)

CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm
MeLil(s) / Dust ___ RUSH ___ 24 hr. ___3-5 Day
RCRA e / Metals & Watding Fume Scan / TCLP ___ RUSH ___ 5 day ___10 day
Organics ___ 24 hr. ___ 3 day ___5 Day
Prior notification is required for RUSH turnarounds.

MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm
E.coli O157:H7, Coliforms, S.aursus ___ 24 hr. ___2 Day ___3-5 Day
Salmonella, Listeria, E.coli, APC, Y A M ___ 48 Hr. ___3-5 Day
Mold ___ RUSH ___24 Mr ___48 Hr ___3 Day ___5 O3y

Turnaround times establish a Ubiratory priority, subject to loboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.

Special Instructions:

REQUESTED ANALYSIS

Client sample ID number (Sample ID's must be unique)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s) RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	MICROBIOLOGY: Salmonella: +/-	E.coli O157:H7: +/-	Listeria: +/-	Aerobic Plate Count: +/- or Quantification	E.coli: +/- or Quantification	Coliforms: +/- or Quantification	S.aureus: +/- or Quantification	Y & M: +/- or Quantification	Mold: +/-, Identification, Quantification	SAMPLER'S INITIALS OR OTHER NOTES	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
1 3W-082311-W		K															884	A				186518
2 3W-082311-N		↓															280	↓				19
3 3W-082411-S																	916					20
4 3W-082411-E																	916					21
5 3W-082411-N																	892					22
6 3W-082411-W																	908					23
7																						
8																						
9																						
10																						

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

Number of samples received: _____ (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: _____ Date/Time: _____

Laboratory Use Only
Received By: _____ Date/Time: 8251 @ 845 Carrier: Fedex

Sample Condition: On Ice Yes / No | Sealed Yes / No | Intact Yes / No
Temp. (F°) ____

Results:	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials
	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials

Attachment I

Key to Count Sheets
Count Sheets
Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type	Structure Types
A = Amosite	F = Fiber
An = Anthophyllite	B = Bundle
C = Chrysotile	C = Cluster
Cr = Crocidolite	M = Matrix
T = Tremolite	

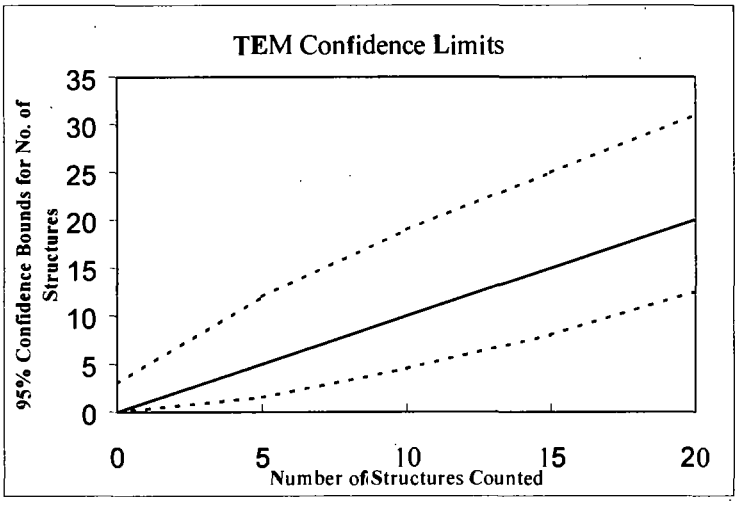
ND = no structures detected
M = other structure associated with a matrix
NAM = Non Asbestos Mineral
XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr	Paul D. LoScalzo
Nathan DelHierro	Mark Steiner
Angela Heitger	Norberto Zimbleman
Jonathan Bernard	Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instmment	JEOL 100 N (S)
Voltage (KV)	100 KV
Magnification	(20K)X 10iOX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client :	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	8 TL
Date received by lab	8-26-11
Lab Job Number:	219459
Lab Sample Number:	786512

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	AH
Analysis date	8-30-11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahora
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

WP

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	F3-6	ND												
	F3-3	ND												
	E3-6	ND		Prep	A: 75% intact				3-5% debris					
	E3-3	ND		Prep	B: 95% intact				3-5% debris					
	C3-6	ND												
B	F3-4	ND												
	F3-1	ND												
	E3-4	ND												
	E3-1	ND												

Rev 3-2009

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Reservoirs Environmental, Inc.
TEM Asbestos Structure Couni

Laboratory name:	REI
Instrument	JEOL 100 N (S)
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	R+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	874
Date received by lab	8-26-11
Lab Job Number:	219459
Lab Sample Number:	786513

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	AH
Analysis date	8-30-11
Method (D=Direct, i=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahora
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Stmcture Type	No. of Struchures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	F3-4	ND												
	F3-1	ND												
	E3-4	ND					Prep A: 60% intact 5% debris							
	E3-1	ND					Prep B: 70% intact 5% debris							
	E2-3	ND												
B	G3-4	ND												
	G3-1	ND												
	F3-4	ND												
	F3-1	ND												
	E3-4	ND												

Rev 9-2008

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 (CX) S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	874
Date received by lab	8-26-11
Lab Job Number:	219459
Lab Sample Number:	786514

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	ND
Analysis date	8/31/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	D	NAM		Sketch	Photo	EDS
A	HS-4	ND												
	GS-4	ND												
	FS-4	ND												
	ES-4	ND												
	CS-4	ND		60-75% Intact				Sr. Debris						
B	AH-4	ND												
	GH-4	ND												
	FH-4	ND												
	EH-4	ND												

Rev 3-2009

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 (N) S
Voltage (KV)	100 KV
Magnification	(20K)X 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	874
Date received by lab	8-26-11
Lab Job Number:	219459
Lab Sample Number:	786515

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	ND
Analysis date	8/31/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	H3-3	ND												
	G3-3	ND												
	F3-3	ND												
	E3-3	ND												
	C3-3	ND												
	B3-3	ND												
B	H6-4	ND												
	G6-4	ND												
	F6-4	ND												

Handwritten across row C3-3: 50-30 Y. Infant Sr. Debris

Rev 3-2009

LA = Libby-type amphibole   OA = Other (non-Libby type) amphibole   C = Chrysotile   NAM = Non-asbestos material

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instmment	JEOL 100 (N) S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	R+R
Sample Tyoe (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	888
Date received by lab	8-26-11
Lab Job Number:	219459
Lab Sample Number:	7865/6

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	8/31/11
Method (D=Direct, I=Indirect, 1A=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grkl storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Stmcture Type	No. of Stmctures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	E4-4	ND												
	E4-1	ND						Prep A 60% on fmt			3-5% debris			
	C4-4	ND						Prep B 60% on fmt			3-5% debris			
	C5-1	ND												
B	F1-4	ND												
	E4-4	ND												
	C4-4	ND												
	C3-4	ND												

8/31/11

Rev 3-2009

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instmment	JEOL 100 (N) S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	884
Date received by lab	8-26-11
Lab Job Number:	219459
Lab Sample Number:	786517

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	8/31/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	L5-1	ND												
	M5-1	ND												
	H5-1	ND						Prep A 80% isopropanol		5-7% debris				
	G5-1	ND						Prep B 80% isopropanol		5-7% debris				
	F5-1	ND						[illegible]		8/31/11				
B	G5-1	ND												
	F5-1	ND												
	E5-1	ND												

Rev 3-2009

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instmment	JEOL 100(N) S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: IL =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	R&R
Sample Type (A=Air; D=Dust):	A
Air volume (L) or dust area (cm2)	884
Date received by lab	8-26-11
Lab Job Number:	219459
Lab Sample Number:	786518

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	8/31/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	K4-3	ND												
	I4-3	ND					Prep A	90% in	tmt		5-7% clusters			
	G4-3	ND					Prep B	90% in	tmt		5-7% clusters			
	F4-3	ND												
B	G4-6	ND												
	F4-6	ND												
	E4-6	ND												
	C4-3	ND												

Rev 3-2009

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Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100(N)S
Voltaae (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	R+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	880
Date received by lab	8-26-11
Lab Job Number:	219459
Lab Sample Number:	786519

F-Factor Calculation (Indirect Preps Only):

Fraeuon of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	8/31/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	H4-1	ND												
	G4-1	ND			Prep	A	90% content			5-7% debris				
	F4-1	ND			Prep	B	80% content			5-7% debris				
	E4-1	ND												
B	L4-1	ND												
	K4-1	ND												
	H4-1	ND												
	G4-1	ND												

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Reservoire Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 (N) S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	916
Date received by lab	8-26-11
Lab Job Number:	219459
Lab Sample Number:	786520

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	8/31/11
Method (D=Direct, I=indirect, 1A=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	K3-6	ND					Prep A	90% in field			3-5% debris			
	H3-6	ND												
	G3-6	ND					Prep B	80% in field			3-5% debris			
	F3-6	ND												
B	K4-4	ND									8/31/11			
	H4-4	ND												
	G4-4	ND												
	F4-4	ND												

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Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instmment	JEOL 100 (N) S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: ID =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tvoe	

Client :	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	916
Date received by lab	8-26-11
Lab Job Number:	219459
Lab Sample Number:	786521

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	8/31/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	K5-1	ND												
	H5-1	ND					Prep A	90% in turf		3-5% dk brn's				
	G5-1	ND					Prep G	90% in turf		3-5% dk brn's				
	F5-1	ND												
B	K6-1	ND						JB 8/31/11						
	H6-1	ND												
	G6-1	ND												
	F6-1	ND												

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Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instmment	JEOL 100 N S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	R+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	892
Date received by lab	8-26-11
Lab Job Number:	219459
Lab Sample Number:	786522

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	8/31/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	G5-4	ND					Prep A 90% in fact A				3-5ho debris			
	F5-4	ND					Prep B ~ A							
	E5-4	ND												
	C5-4	ND												
B	H4-4	ND												
	G4-4	ND												
	F4-4	ND												
	E4-4	ND												

8/31/11

Rev 3-2009

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Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instmment	JEOL 100 (N) S
Voltage (KV)	100 KV
Magnification	(20)KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	R+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	908
Date received by lab	8-26-11
Lab Job Number:	219459
Lab Sample Number:	786523

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filtar (ml)	

Analyzed by	JB
Analysis date	8/31/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting mles (ISO, AHERA, ASTM)	Ahera
Grkl storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Stmcture Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = ves, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EOS
A	H4-4	NO												
	G4-4	NO					Prep A 90% content			3-5% debris				
	F4-4	NO												
	E4-4	NO					Prep B 80% content			3-5% debris				
B	H4-3	NO												
	G4-3	NO												
	F4-3	NO												
	E4-3	NO												

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Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm^2 (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm^2 (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5 micron with an aspect ratio of 5:1 or greater with substantially parallel sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement, with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or hidden by a particulate. The exposed fiber end must meet the fiber definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm^2 clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

$$\text{Area Analyzed, } mm^2 = \#\text{ GO counted} \times \text{Average GO Area (mm)}$$

$$\text{Concentration, s/cc} = \frac{\#\text{ Asbestos Structures}}{\#\text{ GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area } (mm^2)}{\text{Average GO area } (mm^2)} \times \frac{1\text{L}}{1000\text{cc}}$$

$$\text{Filter loading, s/mm}^2 = \frac{\#\text{ Asbestos structures}}{\text{Area Analyzed } (mm^2)}$$

GO = TEM grid opening